

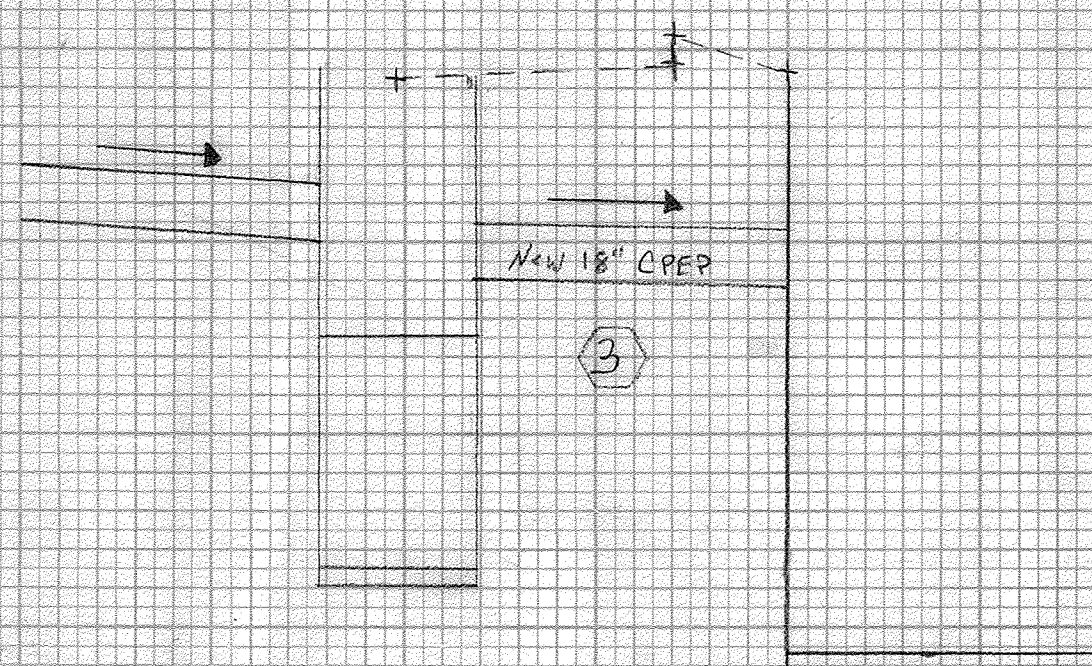
DS #3

EXISTING DI @ STA 20+42.6

204.20 Trench Excavation of Earth
 $(5') (5.8 + 6.25 + 6.25) (3.75) = 183 \text{ FC}^3$
 $\frac{183 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 6.78 \text{ YD}^3$
 $(8') ((5.8 + 6.25 + 6.25) (3.75) (5)) = 16.5 \text{ FC}^3$
 $\frac{16.5 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 6.1 \text{ YD}^3$
 $6.78 \text{ YD}^3 + 6.1 \text{ YD}^3 = 12.88 \text{ YD}^3$ Calc. by RPD

204.30 Granular Backfill For Structures
 $(8') (3.75) (1.25) = 37.5 \text{ FC}^3$
 $\frac{37.5 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 1.39 \text{ YD}^3$
 $\frac{\pi (8')^2}{2} = 100.48 \text{ FC}^2$
 $\frac{\pi (8')^2}{2} (8') = 97.3 \text{ FC}^3$
 $\frac{97.3 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 3.6 \text{ YD}^3$
 $1.39 \text{ YD}^3 + 3.6 \text{ YD}^3 = 5.0 \text{ YD}^3$ Calc. by RPD

SEE INSP DAILY
 09/17/07 TBC



DR #1
 204.20 Trench Excavation of Earth
 DS#1 to center of existing pipe (8')
 $38' \times 4.1' \times 6.8' = 1061.00 \text{ FC}^3$
 $1061.00 \text{ FC}^3 - (106.05') (38') = 1061.00 \text{ FC}^3 - 4033.70 \text{ FC}^3 = 5092.70 \text{ FC}^3$
 $\frac{5092.70 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 188.62 \text{ YD}^3$ Calc. by RPD

204.25 Structure Excavation
 CB 1
 $(13.5') (8') = 108 \text{ FC}^2$
 $(13.5') (8') (4.5') = 486 \text{ FC}^3$
 $\frac{486 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 18 \text{ YD}^3$

From DS#1 to River Bank (Under Sandfill)
 Area 1 $(9.75 + 12.5) (5.0) (4.6) = 267.38 \text{ FC}^3$
 $\frac{267.38 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 9.90 \text{ YD}^3$
 Area 2 $(4) (8) (4.6) = 147.2 \text{ FC}^3$
 $\frac{147.2 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 5.45 \text{ YD}^3$
 Area 3 $(1.9) (4.5) (4.6) = 39.87 \text{ FC}^3$
 $\frac{39.87 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 1.48 \text{ YD}^3$

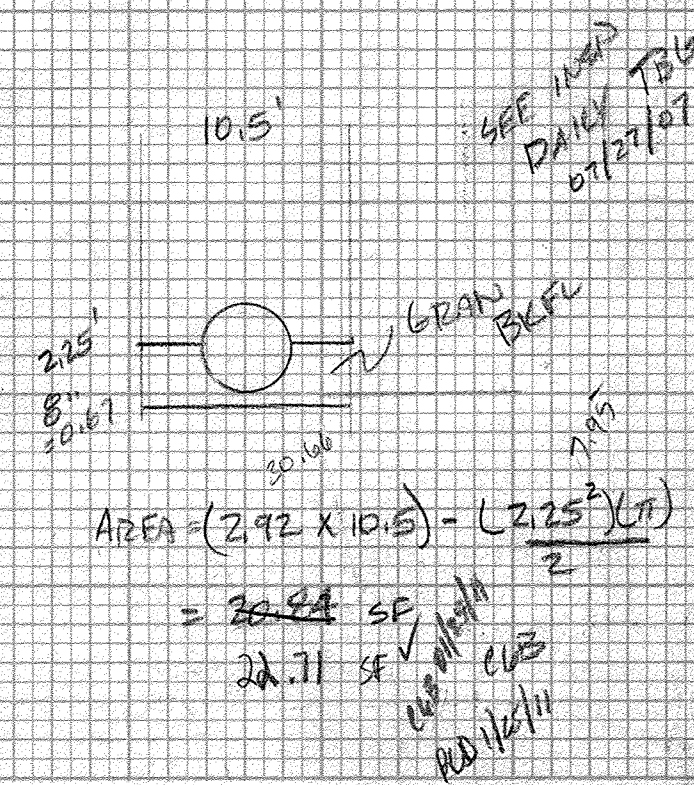
Area 4 $\frac{1}{2} \pi (4.0)^2 (5) = 125.66 \text{ FC}^3$
 $\frac{125.66 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 4.65 \text{ YD}^3$ Calc. by RPD

$47.52 + 9.90 + 19.08 + 4.57 + 14.97 = 106.04 \text{ YD}^3$

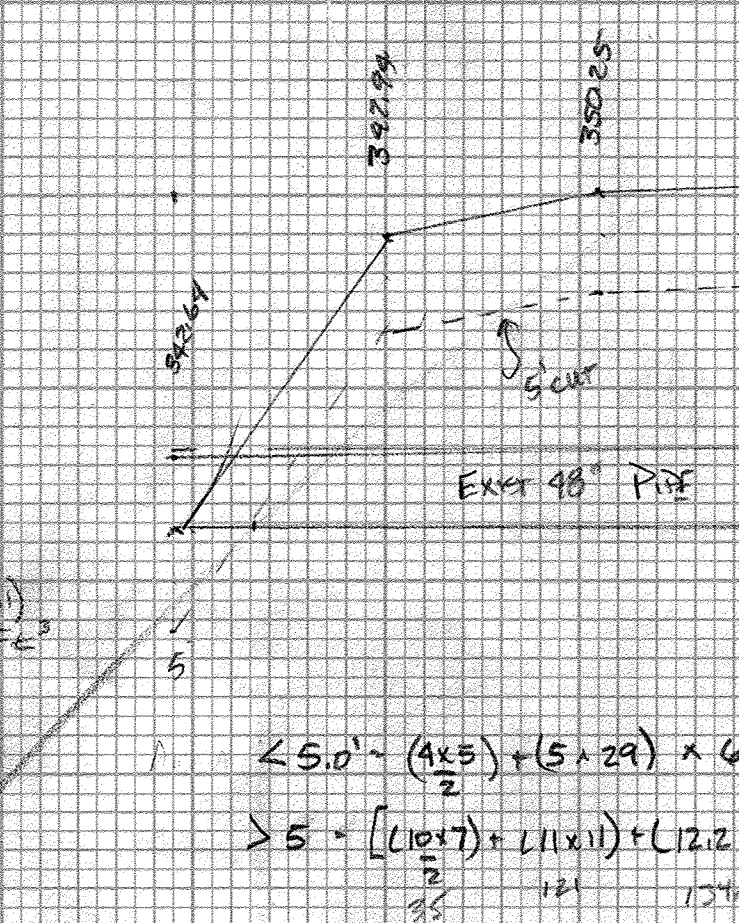
204.30 Granular Backfill For Structures
 Under 54" PCCSP
 $(2.75) (6.5) (4.6) = 822.25 \text{ FC}^3$
 $\frac{822.25 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 30.45 \text{ YD}^3$
 $\frac{456.45 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 16.91 \text{ YD}^3$ Calc. by RPD

204.25 Structure Excavation
 From DS#1 to River Bank (Under Sandfill)
 Area 1 (Area of New Pipe)
 $(35' - 4') \times 5.5' = 207.25 \text{ FC}^2$
 $(207.25 \text{ FC}^2) \times 5.0' = 1036.25 \text{ FC}^3$
 Area 2 (Area Above Pipe)
 $(32' - 2') \times 5.0' = 150 \text{ FC}^2$
 $(150 \text{ FC}^2) \times (4.6) = 690 \text{ FC}^3$
 Area 3
 $(21' - 3') \times 3.0' = 54 \text{ FC}^2$
 $(54 \text{ FC}^2) \times (4.5) = 243 \text{ FC}^3$
 TOTAL = $1036.25 + 690 + 243 = 1969.25 \text{ FC}^3$
 $\frac{1969.25 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 72.94 \text{ YD}^3$ Calc. by TBC

204.30 Granular Backfill For Structures
 6" Below Pipe to 6" Above Top of Pipe
 $(6.6) (4.1) (1.5) = 39.93 \text{ FC}^3$
 $\frac{39.93 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 1.48 \text{ YD}^3$
 Under DS (1' Depth)
 $\pi (8')^2 \times 1' = 50.27 \text{ FC}^3$
 $\frac{50.27 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 1.86 \text{ YD}^3$
 TOTAL GRANULAR BACKFILL = $1.48 + 1.86 = 3.34 \text{ YD}^3$



EXISTING PIPE LENGTH = 38' SEE LAYOUT



DR #2
 204.20 Trench Excavation of Earth
 STA 20+43.82 to STA 20+46.82 (DS @ STA 20+41.32) 204.20
 Area of Structure
 $\pi (4.5')^2 = 63.62 \text{ FC}^2$
 $\pi (4.5')^2 (4.5') = 95.03 \text{ FC}^3$
 $\frac{95.03 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 3.52 \text{ YD}^3$
 Area of Structure Plus 1' around
 $\pi (5.5')^2 = 95.03 \text{ FC}^2$
 $\pi (5.5')^2 (5.5') = 175.82 \text{ FC}^3$
 $\frac{175.82 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 6.51 \text{ YD}^3$
 STA 20+43.82 to STA 20+46.82 (48" Pipe)
 $(7.75 + 12.75 + 13.5) (6.1) (5.2) = 365.62 \text{ FC}^3$
 $\frac{365.62 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 13.54 \text{ YD}^3$
 $(7.75 + 12.75 + 13.5) (6.1) (5.2) = 365.62 \text{ FC}^3$
 $\frac{365.62 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 13.54 \text{ YD}^3$
 $54.66 \text{ YD}^3 + 18.53 \text{ YD}^3 + 13.54 \text{ YD}^3 + 3.77 \text{ YD}^3 = 90.5 \text{ YD}^3$ Calc. by RPD

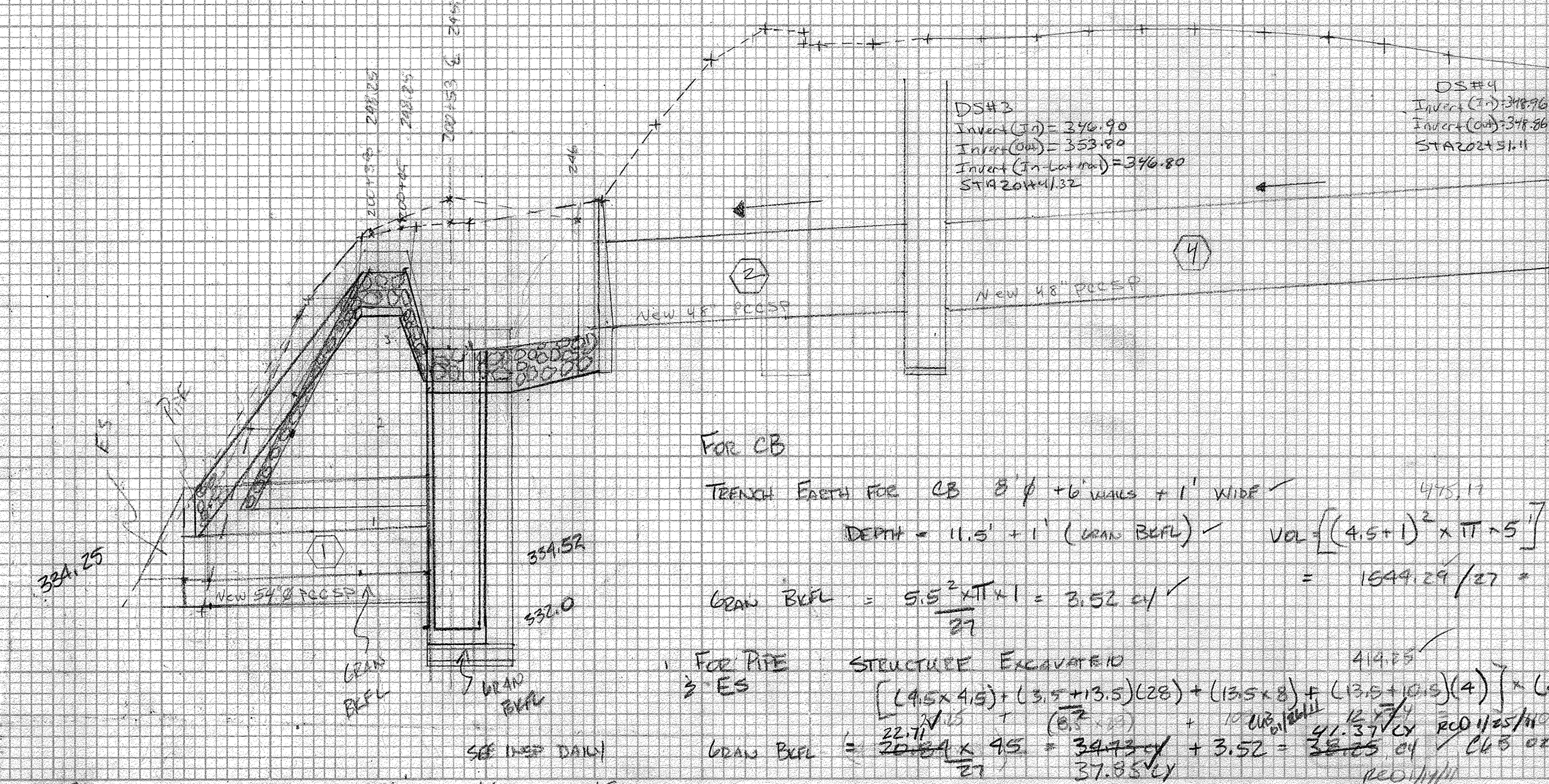
204.30 Granular Backfill For Structures
 $(54.92) (6.1) (2.55) = 31.58 \text{ YD}^3$
 $\frac{31.58 \text{ YD}^3}{27 \text{ FC}^3/\text{YD}^3} = 1.17 \text{ YD}^3$
 $\frac{361.88 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 13.40 \text{ YD}^3$
 $31.58 \text{ YD}^3 + 13.40 \text{ YD}^3 = 44.98 \text{ YD}^3$ Calc. by RPD

SEE SHEET #2

DR #4
 Trench Excavation of Earth
 STA 20+46.82 to STA 20+49.61 (48" PCCSP)
 $(72.79' / 12.5' + 12.5' \times 9.0) (6.1) = 5038.20 \text{ FC}^3$
 $\frac{5038.20 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 186.58 \text{ YD}^3$
 $(72.79') ((12.5' + 12.5' \times 9.0) (5.0) (6.1) (5.0)) = 11406.06 \text{ FC}^3$
 $\frac{11406.06 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 52.08 \text{ YD}^3$
 STA 20+49.61 to STA 20+51.11 (48" PCCSP)
 $(2.7') (8.62' + 7.37') (6.1) = 1316.78 \text{ FC}^3$
 $\frac{1316.78 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 48.77 \text{ YD}^3$
 $(2.7') ((8.62' + 7.37') (5') (6.1) (5')) = 247.05 \text{ FC}^3$
 $\frac{247.05 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 9.15 \text{ YD}^3$
 STA 20+51.11 to STA 20+51.11 (DS #4 48" PCCSP)
 $4' + 4.2' + 4.2' = 12.4 \text{ YD}^3$
 $\frac{12.4 \text{ YD}^3}{27 \text{ FC}^3/\text{YD}^3} = 0.46 \text{ YD}^3$
 $\frac{184.38 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 6.83 \text{ YD}^3$
 $184.38 + 52.08 + 48.77 + 9.15 + 0.46 = 394.84 \text{ YD}^3$ Calc. by RPD

204.30 Granular Backfill (48" PCCSP)
 $(2.5') (6.1) (10.79) = 1532.32 \text{ FC}^3$
 $\frac{1532.32 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 57.12 \text{ YD}^3$
 $\frac{1532.32 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 57.12 \text{ YD}^3$
 $57.12 \text{ YD}^3 + 24.89 \text{ YD}^3 = 82.01 \text{ YD}^3$ Calc. by RPD

SEE SHEET #2



FOR CB

TRENCH EARTH FOR CB 8' x 6' WIDE + 1' WIDE
 DEPTH = 11.5' + 1' (GRAN. BACKFILL)
 $V = \pi (4.5')^2 \times 11.5' + \pi (4.5')^2 \times 1' = 1899.24 / 27 = 69.97 \text{ YD}^3$
 GRAN. BACKFILL = $\frac{5.5^2 \times \pi \times 1}{27} = 3.52 \text{ YD}^3$
 FOR PIPE STRUCTURE EXCAVATION
 $(4.5' \times 4.5') + (3.5' \times 3.5') (2.0) + (13.5' \times 8') + (13.5' \times 10.5') (4') = 161.10 \text{ YD}^3$
 $\frac{161.10 \text{ YD}^3}{27 \text{ FC}^3/\text{YD}^3} = 5.97 \text{ YD}^3$
 GRAN. BACKFILL = $\frac{32.11 \text{ FC}^3}{27 \text{ FC}^3/\text{YD}^3} = 1.19 \text{ YD}^3$
 $5.97 \text{ YD}^3 + 1.19 \text{ YD}^3 = 7.16 \text{ YD}^3$ Sheet 1